

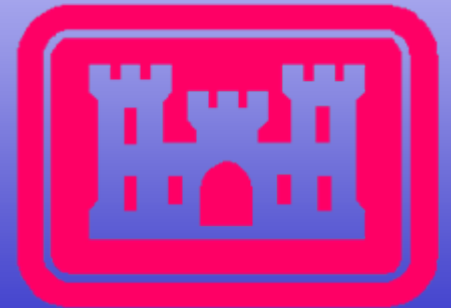
Saco River & Camp Ellis Beach

Saco, Maine



**Shore Damage Mitigation
Project**

**US Army Corps of Engineers
New England District**



Agenda

- **Description of Alternatives**
- **Comparison of Alternative Costs**
- **Conclusion**
- **Way Ahead**

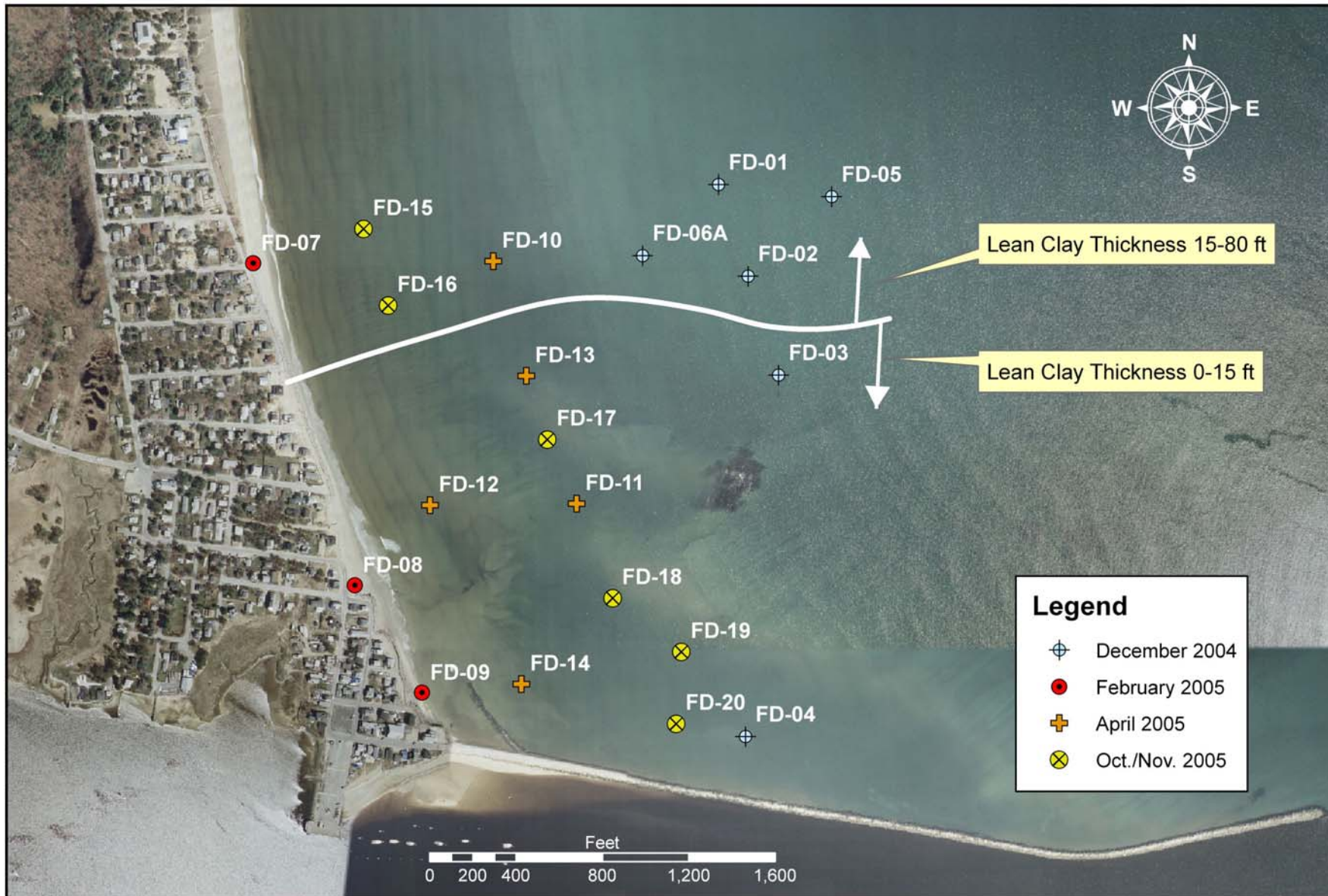
Figure 2 - Camp Ellis, Saco, Maine - Location Map





US Army Corps
of Engineers®
New England District

Camp Ellis, Saco Maine Shoreline Protection Location and Date of Borings

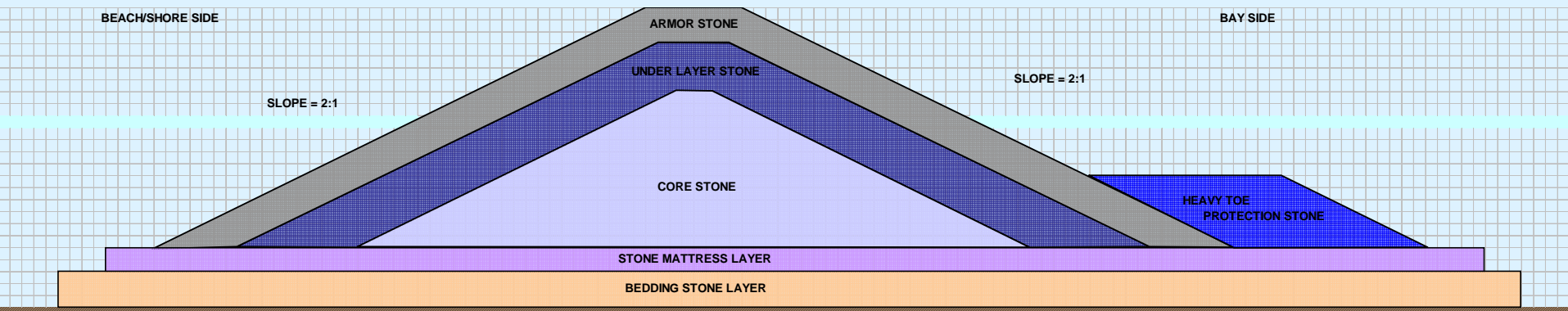


Alternative Plans

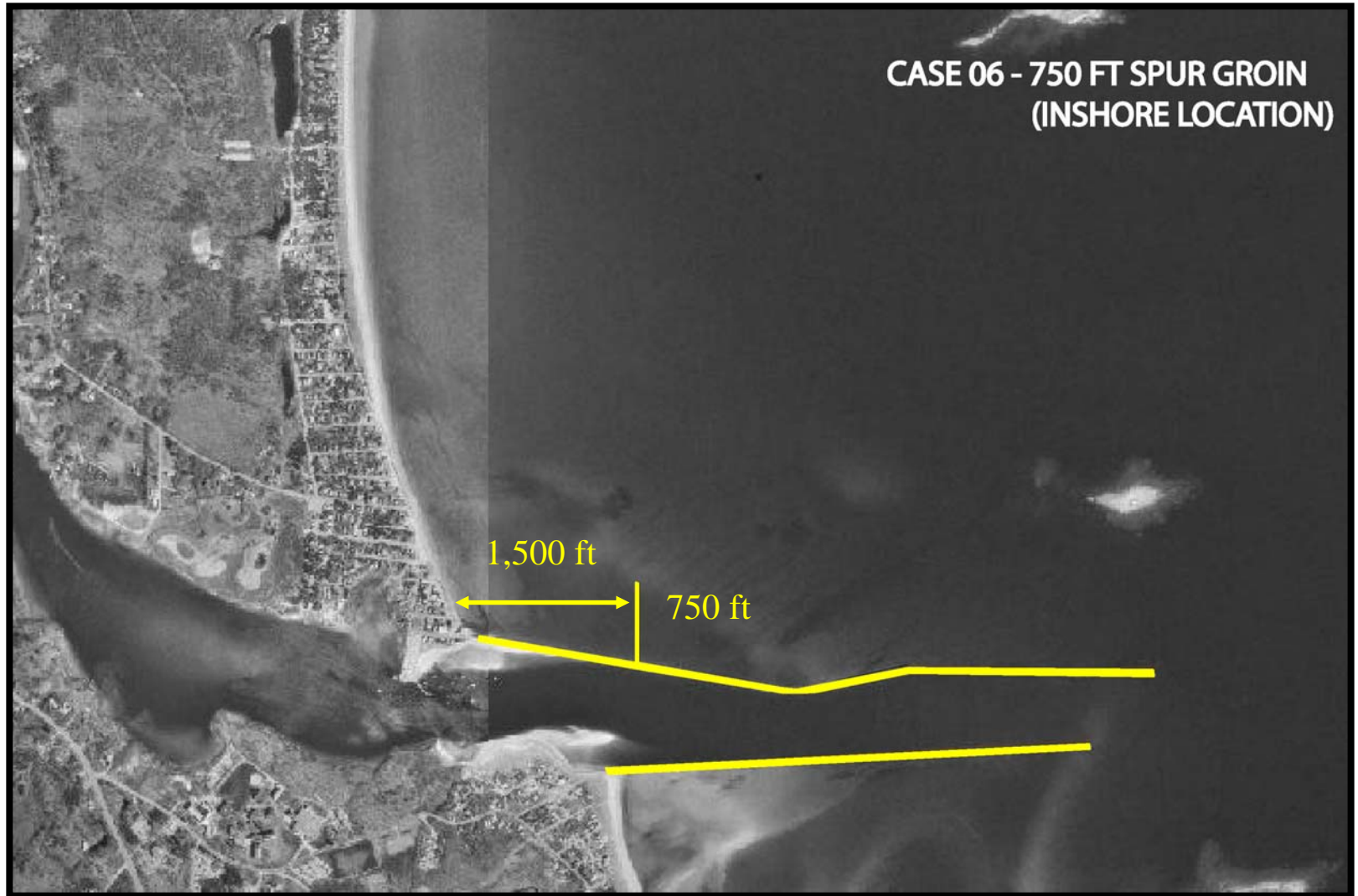
Plan	Description
6	750-Foot Spur Jetty
9	100-Ft Spur Jetty Plus 5 T-Head Groins
18	500-Ft Spur Jetty Plus 935-Ft Offshore Breakwater
25	500-Ft Spur Jetty Plus 3 Segmented Breakwaters
25A	500-Ft Spur Jetty Plus 2 Segmented Breakwaters
	Buyout and Demolition

Note: All Structural Plans Include 300,000 CY Beachfill

TYPICAL BREAKWATER & SPUR JETTY CROSS-SECTION



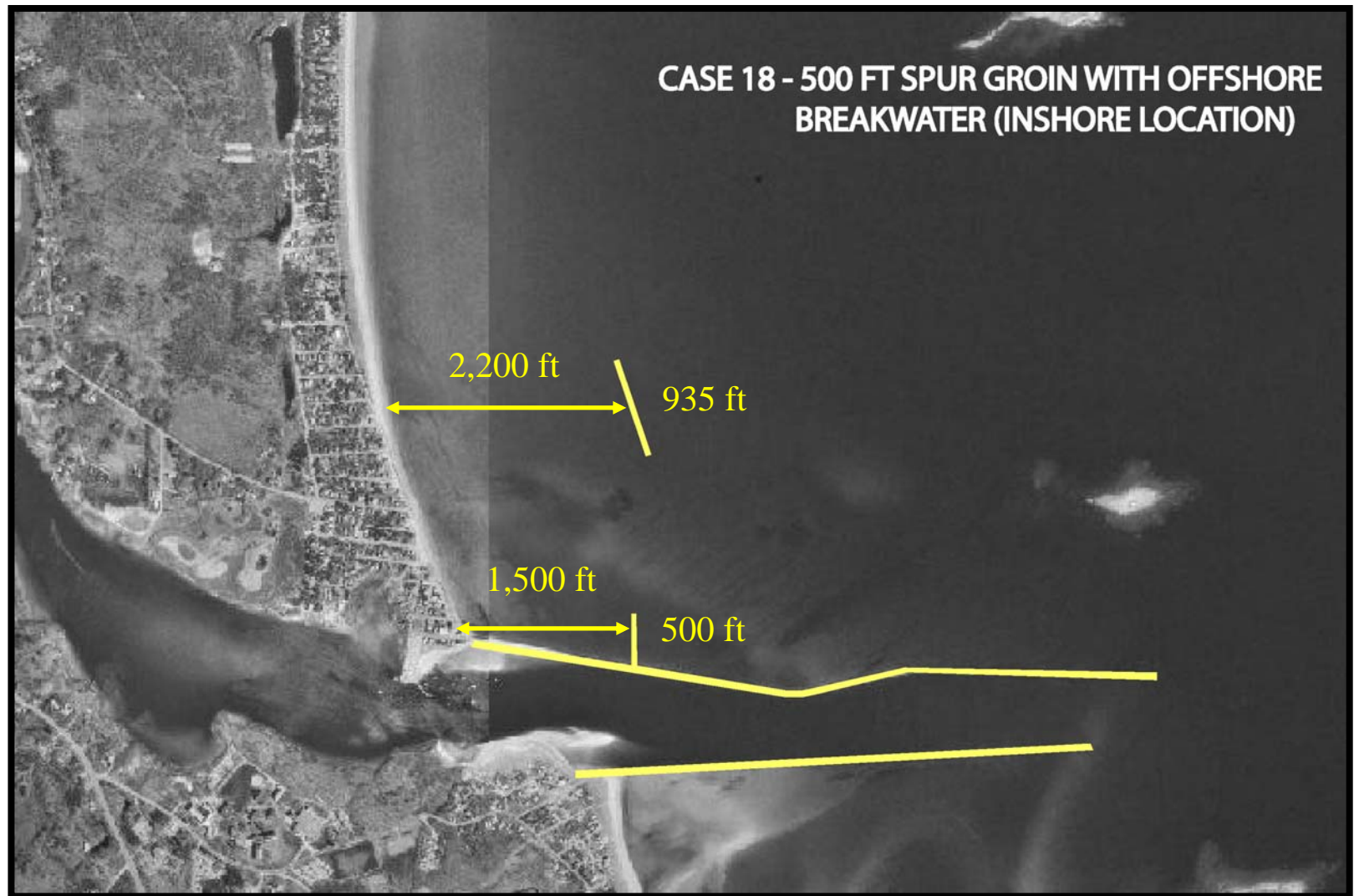
Plan 6 – Optimized Spur Groin



Plan 9 – T-Head Groins



Plan 18 – Spur Plus Offshore Breakwater



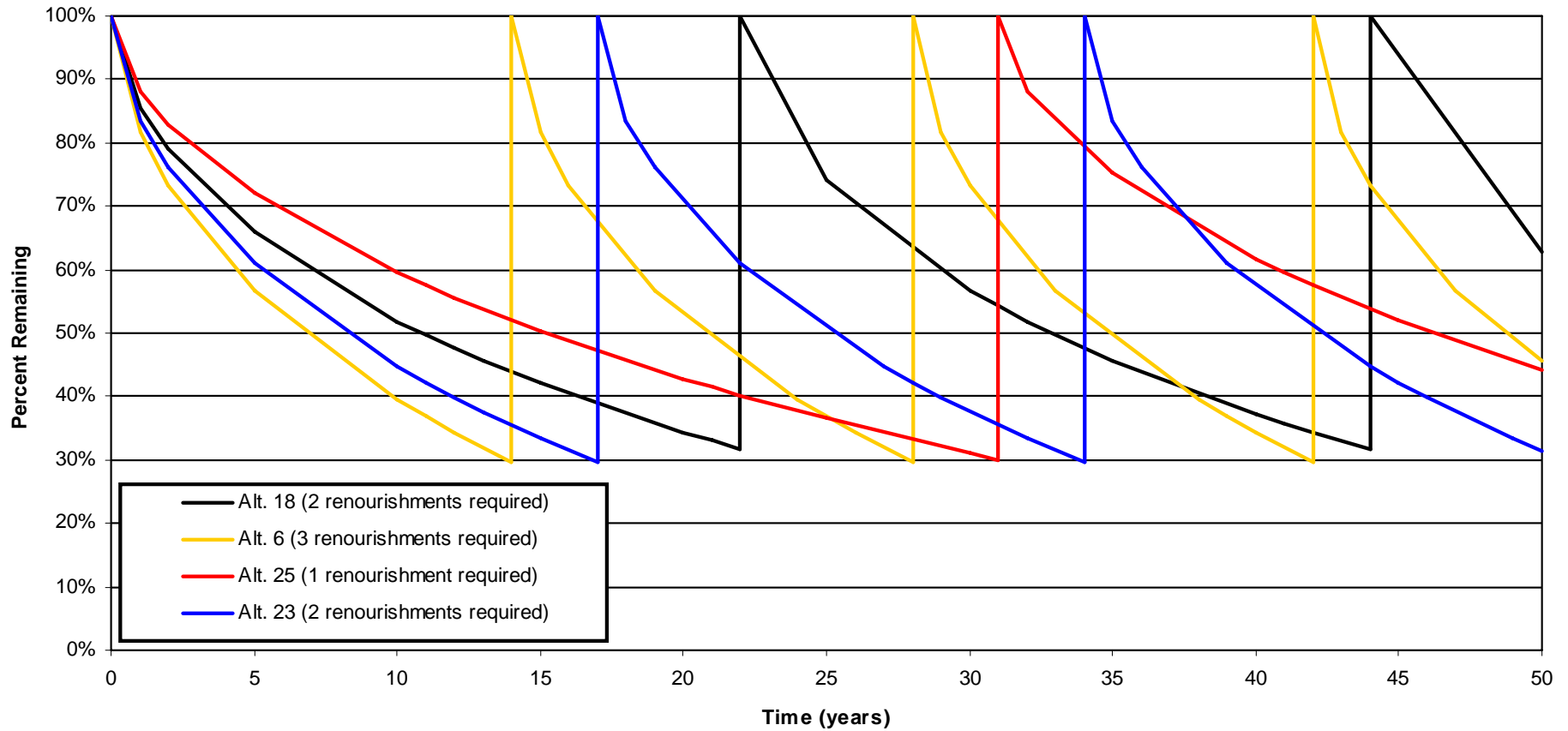
Plan 25 – Spur Plus 3 Segmented Breakwaters



Plan 25A – Spur Plus 2 Segmented Breakwaters

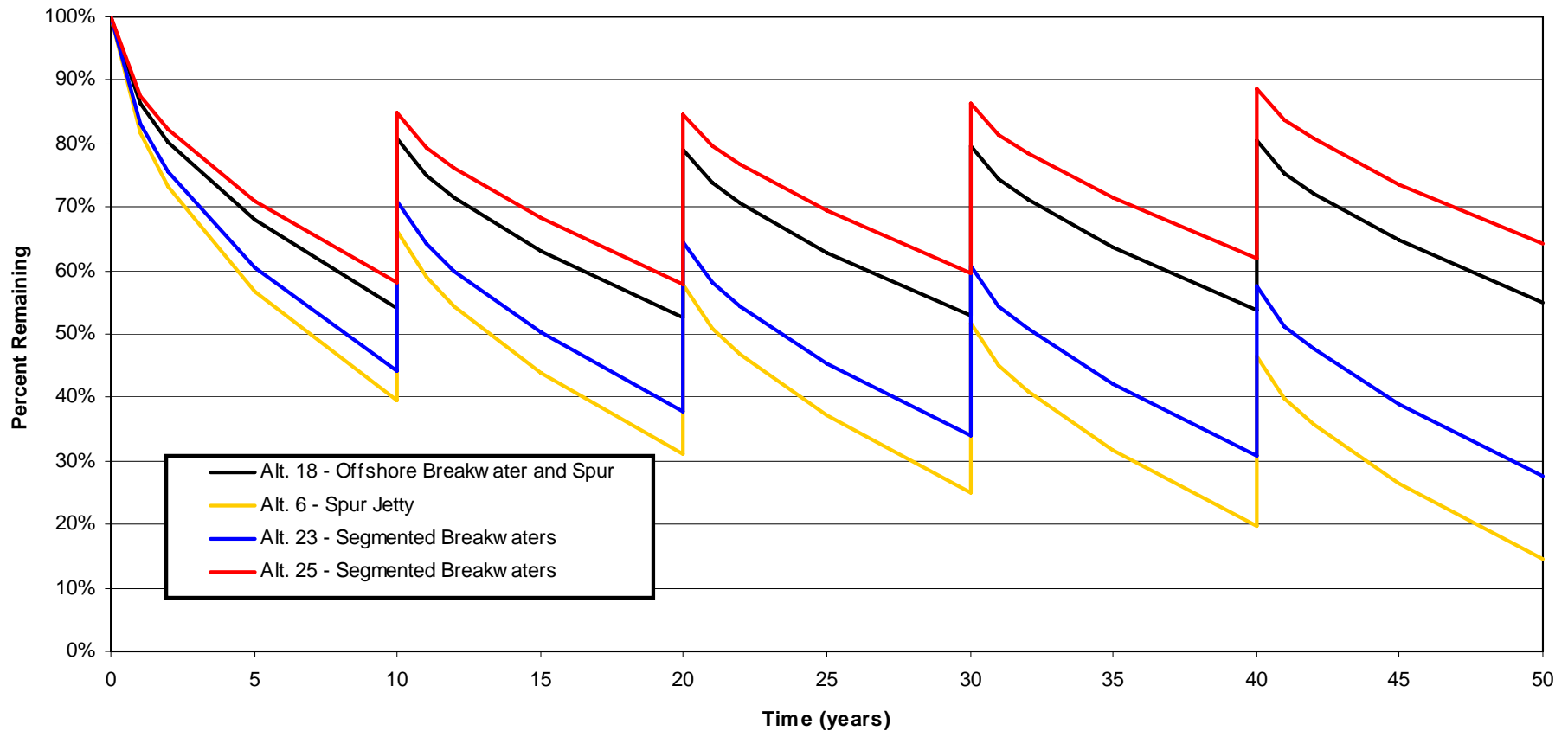


Beach Renourishment Requirements



Beach Renourished with Sand Dredged from Saco Harbor

(Historic Maintenance Dredging Averages 80,000 cubic yards every 10 years)



Cost Comparison of Alternatives

Plan		First Cost	Annual Cost	# of Beachfills
6	750-Foot Spur Jetty	\$17,860,000	\$1,307,000	3+
18	500-Ft Spur Jetty + 935-Ft Offshore Breakwater	\$47,070,000	\$2,846,000	2+
25	500-Ft Spur Jetty Plus 3 Segmented Breakwaters	\$38,180,000	\$2,312,000	1+
25A	500-Ft Spur Jetty Plus 2 Segmented Breakwaters	\$25,120,000	\$1,674,000	2+
9	100-Ft Spur Jetty Plus 5 T-Head Groins	\$27,120,000	\$1,605,000	0
	Buyout and Demolition	\$44,900,000	\$2,640,000	0

Viabile Alternatives

Plan		First Cost	Annual Cost	# of Beachfills
6	750-Foot Spur Jetty	\$17,860,000	\$1,307,000	3+

25A	500-Ft Spur Jetty Plus 2 Segmented Breakwaters	\$25,120,000	\$1,674,000	2+
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Plan 6 and Plan 25A Cost Comparison	Plan 6 – Spur Jetty + Beachfill	Plan 25A – Spur + 2 Breakwaters + Beachfill
Construction of Structures	\$8,170,000	\$13,700,000
Construction of Beachfill	\$5,230,000	\$5,230,000
Contingencies	\$2,620,000	\$3,760,000
Engineering & Design	\$280,000	\$340,000
Supervision & Administration	\$1,410,000	\$1,940,000
Monitoring	<u>\$150,000</u>	<u>\$150,000</u>
TOTAL	\$17,860,000	\$25,120,000

Plan 6 and Plan 25A Annual Cost Comparison	Plan 6 – Spur Jetty + Beachfill	Plan 25A – Spur + 2 Breakwaters + Beachfill
# of Renourishment Events	3+	2+
Amortization of First Cost	\$997,000	\$1,403,000
Maintenance of Structures	\$48,000	\$81,000
Renourishment of Beachfill	<u>\$262,000</u>	<u>\$190,000</u>
Total Annual Cost	\$1,307,000	\$1,674,000
Discount for FNP Sands (1/3)	<u>-\$87,000</u>	<u>-\$63,000</u>
Total Annual Cost with Discount	\$1,220,000	\$1,611,000

Plan 6 and Plan 25A Maintenance Comparison	Plan 6 – Spur Jetty + Beachfill	Plan 25A – Spur + 2 Breakwaters + Beachfill
# of Renourishment Events	3+	2+
Renourishment of Beachfill	\$262,000	\$190,000
Maintenance of Structures	\$48,000	\$81,000
Discount for FNP Sands (1/3)	<u>-\$87,000</u>	<u>-\$63,000</u>
TOTAL	\$223,000	\$208,000

CONCLUSIONS

- * Detailed study has determined that there are two viable alternatives (Plans 6 and 25A)**
- * Based on Federal regulations, including Benefit/Cost Analysis, Plan 6 is recommended**
- * However, Plan 25A may be more attractive to the City due to reduced maintenance costs.**
- * Since the cost of either plan is greater than \$5 million, specific authorization is required (WRDA)**

REMAINING TASKS

- **Preparation of Draft Environmental Assessment and Design Document for Corps Review**
- **Public, State and Federal Review of Environmental Assessment**
- **Completion of Final Detailed Design**
- **Project Authorization – Water Resources Development Act**
- **Commitment of Project Funds – Appropriations Act**
- **Execution of Project Cooperation Agreement between Corps and City of Saco (or State)**
- **Solicitation of Bids for Construction of Structures**
- **Award of Contract, Construction and Completion of Structures**
- **Solicitation of Bids for Beachfill**
- **Award of Contract, Construction and Completion of Beachfill**